#11

1600

RAW SEQUENCE LISTING   DATE: 04/02/2003
PATENT APPLICATION: **US/09/895,435A**   TIME: 12:20:35

Input Set : **E:\9882012999.txt**
Output Set: **N:\CRF4\04022003\I895435A.raw**

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 3 <110> APPLICANT: Stewart, A. F.
 4          Zhang, Y.
 5          Hallet, B.
 7 <120> TITLE OF INVENTION: A New Tyrosine Recombinase for Genetic Engineering
 9 <130> FILE REFERENCE: 9882-012-999
11 <140> CURRENT APPLICATION NUMBER: 09/895,435A
12 <141> CURRENT FILING DATE: 2001-06-30
14 <160> NUMBER OF SEQ ID NOS: 10
16 <170> SOFTWARE: PatentIn version 3.0
18 <210> SEQ ID NO: 1
19 <211> LENGTH: 244
20 <212> TYPE: DNA
21 <213> ORGANISM: Bacillus thuringiensis
23 <400> SEQUENCE: 1
24 ggtaccgcca gcatttcgga aaaaaccac gctaagaaaa tcagagttaa aaaatcagaa    60
25 aatatatcat tattccttga cacatacatg ttcttttttt atacaaaaaa taatacaaca   120
26 caatattaat tgtgttgtat taggtgttat aataaatata aatctagggg tttaacgcaa   180
27 cacaatttat cgataaataa atacttttag acgcaacaca atttatagac gcggaggaaa   240
28 tcac                                                               244
30 <210> SEQ ID NO: 2
31 <211> LENGTH: 118
32 <212> TYPE: DNA
33 <213> ORGANISM: Bacillus thuringiensis
35 <400> SEQUENCE: 2
36 taatacaaca caatattaat tgtgttgtat taggtgttat aataaatata aatctagggg    60
37 tttaacgcaa cacaatttat cgataaataa atactttttag acgcaacaca atttatag    118
39 <210> SEQ ID NO: 3
40 <211> LENGTH: 32
41 <212> TYPE: DNA
42 <213> ORGANISM: Bacillus thuringiensis
44 <400> SEQUENCE: 3
45 taatacaaca caatattaat tgtgttgtat ta                                 32
47 <210> SEQ ID NO: 4
48 <211> LENGTH: 249
49 <212> TYPE: DNA
50 <213> ORGANISM: Bacillus thuringiensis
52 <400> SEQUENCE: 4
53 ggggtaccgc cagcatttcg gaaaaaaacc acgctaagaa aatcagagtt aaaaaatcag    60
54 aaaatatatc attattcctt gacacataca tgttctttttt ttatacaaaa aataatacaa   120
55 cacaatatta attgtgttgt attaggtgtt ataataaata aaatctagg ggtttaacgc    180
56 aacacaattt atcgataaat aaatacttttt agacgcaaca caattttatag acgcggagga   240
57 aatcacatg                                                          249
59 <210> SEQ ID NO: 5
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60 <211> LENGTH: 798
61 <212> TYPE: DNA
62 <213> ORGANISM: Bacillus thuringiensis
64 <220> FEATURE:
65 <221> NAME/KEY: CDS
66 <222> LOCATION: (1)..(798)
68 <400> SEQUENCE: 5
69 atg gat gtt gca aaa cag ttt tct tct tat ctt aaa caa gag aat aaa        48
70 Met Asp Val Ala Lys Gln Phe Ser Ser Tyr Leu Lys Gln Glu Asn Lys
71 1               5                   10                  15
72 acc gag aac act gtt cag gga tac aca tca ggt att aga cag tac ata        96
73 Thr Glu Asn Thr Val Gln Gly Tyr Thr Ser Gly Ile Arg Gln Tyr Ile
74              20                  25                  30
75 aaa tgg ttt gaa ggt tcc tat gac aga aaa ttg aca aaa ttg tac cga       144
76 Lys Trp Phe Glu Gly Ser Tyr Asp Arg Lys Leu Thr Lys Leu Tyr Arg
77          35                  40                  45
78 caa aat atc tta gag tac att agt tat tta aag aat gtc aaa atg ttg       192
79 Gln Asn Ile Leu Glu Tyr Ile Ser Tyr Leu Lys Asn Val Lys Met Leu
80      50                  55                  60
81 aac gcc aag tcc att aac cac aag att agt agc ctt gct aaa ttt aat       240
82 Asn Ala Lys Ser Ile Asn His Lys Ile Ser Ser Leu Ala Lys Phe Asn
83 65                  70                  75                  80
84 gaa ttt cta ata cag aaa gga agt caa caa gat caa gta att tta tta       288
85 Glu Phe Leu Ile Gln Lys Gly Ser Gln Gln Asp Gln Val Ile Leu Leu
86                  85                  90                  95
87 gat gta aaa aag ttt tta caa agt gtg tta gag gat aat aac aaa cgt       336
88 Asp Val Lys Lys Phe Leu Gln Ser Val Leu Glu Asp Asn Asn Lys Arg
89              100                 105                 110
90 aat tat gca att gcc act ctc cta gca tat aca gga gta cgt att tca       384
91 Asn Tyr Ala Ile Ala Thr Leu Leu Ala Tyr Thr Gly Val Arg Ile Ser
92          115                 120                 125
93 gag gca tta tct atc aaa atg aat gac ttc aat tta cag act ggg gaa       432
94 Glu Ala Leu Ser Ile Lys Met Asn Asp Phe Asn Leu Gln Thr Gly Glu
95      130                 135                 140
96 tgt att att cga agt gga aaa gga ggt aaa caa cga att gta tta cta       480
97 Cys Ile Ile Arg Ser Gly Lys Gly Gly Lys Gln Arg Ile Val Leu Leu
98 145                 150                 155                 160
99 aat agt aag gta ctt agt gct atc aaa gat tat ctc atc gat cga aaa       528
100 Asn Ser Lys Val Leu Ser Ala Ile Lys Asp Tyr Leu Ile Asp Arg Lys
101                 165                 170                 175
102 aca tac agt aca gca cat gaa tct ccg tat ctt ttt att agt aaa aag      576
103 Thr Tyr Ser Thr Ala His Glu Ser Pro Tyr Leu Phe Ile Ser Lys Lys
104                 180                 185                 190
105 cga gaa aag ctc gac cgt acg gtc gtc aat cgt atc ttt aaa tca tac      624
106 Arg Glu Lys Leu Asp Arg Thr Val Val Asn Arg Ile Phe Lys Ser Tyr
107             195                 200                 205
108 agg aat gtt att act cca cac caa tta cga cac ttc ttc tgt acg aat      672
109 Arg Asn Val Ile Thr Pro His Gln Leu Arg His Phe Phe Cys Thr Asn
110     210                 215                 220
```

```
111 gca att caa aaa gga ttt agc att cat gaa gtt gca aat caa gct ggg      720
112 Ala Ile Gln Lys Gly Phe Ser Ile His Glu Val Ala Asn Gln Ala Gly
113 225             230             235             240
114 cac tct aac atc cat acg aca cta ctt tac aca aat cca aac caa ctg      768
115 His Ser Asn Ile His Thr Thr Leu Leu Tyr Thr Asn Pro Asn Gln Leu
116             245             250             255
117 cag cta aaa aat aaa atg gag ctc tta taa                              798
118 Gln Leu Lys Asn Lys Met Glu Leu Leu
119             260             265
121 <210> SEQ ID NO: 6
122 <211> LENGTH: 265
123 <212> TYPE: PRT
124 <213> ORGANISM: Bacillus thuringiensis
126 <400> SEQUENCE: 6
127 Met Asp Val Ala Lys Gln Phe Ser Ser Tyr Leu Lys Gln Glu Asn Lys
128 1               5               10              15
130 Thr Glu Asn Thr Val Gln Gly Tyr Thr Ser Gly Ile Arg Gln Tyr Ile
131             20              25              30
133 Lys Trp Phe Glu Gly Ser Tyr Asp Arg Lys Leu Thr Lys Leu Tyr Arg
134             35              40              45
136 Gln Asn Ile Leu Glu Tyr Ile Ser Tyr Leu Lys Asn Val Lys Met Leu
137     50              55              60
139 Asn Ala Lys Ser Ile Asn His Lys Ile Ser Ser Leu Ala Lys Phe Asn
140 65              70              75              80
142 Glu Phe Leu Ile Gln Lys Gly Ser Gln Gln Asp Gln Val Ile Leu Leu
143             85              90              95
145 Asp Val Lys Lys Phe Leu Gln Ser Val Leu Glu Asp Asn Asn Lys Arg
146             100             105             110
148 Asn Tyr Ala Ile Ala Thr Leu Leu Ala Tyr Thr Gly Val Arg Ile Ser
149     115             120             125
151 Glu Ala Leu Ser Ile Lys Met Asn Asp Phe Asn Leu Gln Thr Gly Glu
152     130             135             140
154 Cys Ile Ile Arg Ser Gly Lys Gly Gly Lys Gln Arg Ile Val Leu Leu
155 145             150             155             160
157 Asn Ser Lys Val Leu Ser Ala Ile Lys Asp Tyr Leu Ile Asp Arg Lys
158             165             170             175
160 Thr Tyr Ser Thr Ala His Glu Ser Pro Tyr Leu Phe Ile Ser Lys Lys
161             180             185             190
163 Arg Glu Lys Leu Asp Arg Thr Val Val Asn Arg Ile Phe Lys Ser Tyr
164             195             200             205
166 Arg Asn Val Ile Thr Pro His Gln Leu Arg His Phe Phe Cys Thr Asn
167     210             215             220
169 Ala Ile Gln Lys Gly Phe Ser Ile His Glu Val Ala Asn Gln Ala Gly
170 225             230             235             240
172 His Ser Asn Ile His Thr Thr Leu Leu Tyr Thr Asn Pro Asn Gln Leu
173             245             250             255
175 Gln Leu Lys Asn Lys Met Glu Leu Leu
176             260             265
178 <210> SEQ ID NO: 7
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Input Set : **E:\9882012999.txt**
Output Set: **N:\CRF4\04022003\I895435A.raw**

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179 <211> LENGTH: 116
180 <212> TYPE: DNA
181 <213> ORGANISM: Bacillus thuringiensis
183 <400> SEQUENCE: 7
184 taatacaaca caatattaat tgtgttgtat taggtgttat aataaatata tatctagggg      60
185 tttaacgcaa cacaatttat cgataaataa atacttttag acgcaacaca atttat         116
187 <210> SEQ ID NO: 8
188 <211> LENGTH: 116
189 <212> TYPE: DNA
190 <213> ORGANISM: Bacillus thuringiensis
192 <400> SEQUENCE: 8
193 taatacaaca caatattaat tgtgttgtat taggtgttat aatatatata aatctagggg      60
194 tttaacgcaa cacaatttat cgataaataa atacttttag acgcaacaca atttat      .  116
196 <210> SEQ ID NO: 9
197 <211> LENGTH: 116
198 <212> TYPE: DNA
199 <213> ORGANISM: Bacillus thuringiensis
201 <220> FEATURE:
202 <221> NAME/KEY: N_region
203 <222> LOCATION: 33 .. 64
204 <223> OTHER INFORMATION: n = a, t, g, or c
207 <220> FEATURE:
208 <221> NAME/KEY: N_region
209 <222> LOCATION: 81 .. 100
210 <223> OTHER INFORMATION: n = a, t, g, or c
212 <400> SEQUENCE: 9
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W--> 213 taatacaaca caatattaat tgtgttgtat tannnnnnnn nnnnnnnnnn nnnnnnnnnn   60
```
214 nnnnacgcaa cacaatttat nnnnnnnnnn nnnnnnnnnn acgcaacaca atttat        116
216 <210> SEQ ID NO: 10
217 <211> LENGTH: 124
218 <212> TYPE: DNA
219 <213> ORGANISM: Bacillus thuringiensis
222 <220> FEATURE:
223 <221> NAME/KEY: N_region
224 <222> LOCATION: 33 .. 74
225 <223> OTHER INFORMATION: n = a, t, g, or c
227 <400> SEQUENCE: 10
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W--> 228 taatacaaca caatattaat tgtgttgtat tannnnnnnn nnnnnnnnnn nnnnnnnnnn   60
```
229 nnnnnnnnnn nnnnacgcaa cacaatttac gataaataaa tactttttaga cgcaacacaa    120
230 ttta                                                                 124
```

RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 04/02/2003
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<u>Please Note:</u>
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:9; N Pos. 33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52
Seq#:9; N Pos. 53,54,55,56,57,58,59,60,61,62,63,64,81,82,83,84,85,86,87,88
Seq#:9; N Pos. 89,90,91,92,93,94,95,96,97,98,99,100
Seq#:10; N Pos. 33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52
Seq#:10; N Pos. 53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72
Seq#:10; N Pos. 73,74